L12 ANSWER 2 OF 25 INSPEC
Copyright 1995, FIZ Karlsruhe
AN 95:5021175 INSPEC DN A9517-6855-065
TI ***Crystallization*** of ***amorphous*** ***silicon*** by NiSi2 precipitates.
AU Schoenfeld, O. (RIKEN, Inst. of Phys. & Chem. Res., Saitama, Japan); Hempel, T.; Zhao, X.; Aoyagi, Y.
SO Thin Solid Films (1 June 1995) vol.261, no.1-2, p.236-40. 12 refs.
Price: CCCC 0040-6090/95/$9.50
CODEN: THSFAP ISSN: 0040-6090
DT Journal
TC Experimental
CY Switzerland
LA English
DN A9517-6855-065
AB Using a thermal annealing treatment, amorphous ***Ni*** -doped silicon thin films were ***crystallized*** into a heterogenous microcrystalline structure. Structural investigations show that NiSi, precipitates formed at the beginning of the annealing process behave as nucleation centres for the heterogeneous nucleation in the amorphous matrix, and initiate the ***crystallization*** of the ***amorphous*** ***silicon*** thin films. For concentrations below 0.5 at.% ***Ni*** the phase transition consists of an epitaxial growth process of crystalline silicon at the NiSi2 precipitates forming a net of needle-like grown silicon crystallites and a second process forming microcrystalline silicon in the space between the needles. Crystallites with a grain diameter of about 10 nm were observed if the distance between the needles was less than 50 nm. The determination of the crystal growth kinetics depending on ***Ni*** concentration was carried out by means of the widening of the Tauc gap due to ***crystallization*** .

L12 ANSWER 3 OF 25 INSPEC
Copyright 1995, FIZ Karlsruhe
AN 95:4969062 INSPEC DN A9513-8115N-001; B9507-0510D-098
TI Transient kinetics in solid phase epitaxy of ***Ni*** doped ***amorphous*** ***silicon*** .
AU Kuznetsov, A.Yu.; Svensson, B.G. (Dept. of Solid State Electron., R. Inst. of Technol., Stockholm, Sweden)
SO Nuclear Instruments & Methods in Physics Research, Section B (Beam Interactions with Materials and Atoms) (March 1995) vol.B96, no.1-2, p.261-4. 22 refs.
Price: CCCC 0168-583X/95/$09.50
CODEN: NIMBEU ISSN: 0168-583X
Conference: Tenth International Conference on Ion Implantation Technology. Catania, Italy, 13-17 June 1994
Sponsor(s): Alcatel; Applied Mater.; Atomika Analysetechnik Gmbh; et al
DT Conference Article; Journal
TC Experimental
CY Netherlands
LA English
DN A9513-8115N-001; B9507-0510D-098
AB Solid phase epitaxy (SPE) of ***amorphous*** ***silicon*** layers doped with ***Ni*** in the concentration range 1019-1020 cm-3 has been studied. The amorphous layers were produced by

self-ion implantation of Si(100) samples. Transient kinetics of the SPE process are observed, and the results imply that the regrowth changes from an initial impurity driven ***crystallization*** to the 'ordinary' thermally activated one. The initial enhancement of the SPE rate may be attributed to a difference in the density of trapping sites for ***Ni*** atoms at the initial ('as-prepared') amorphous-crystalline (a-c) interface compared to the advancing one. The role of the simultaneous process of ***Ni*** precipitation is also addressed. The results are consistent with those SPE models which treat rearrangements at the a-c interface as a critical stage in the ***crystallization*** process.

L12 ANSWER 4 OF 25 INSPEC

AN 95:4943131 INSPEC DN A9511-7340N-003; B9506-2530D-033
TI Structure and electrical transport in microcrystalline composite Si-NiSi2 thin films.
AU Schoenfeld, O.; Zhao, X. (RIKEN, Inst. of Phys. & Chem. Res., Saitama, Japan); Hempel, T.; Aoyagi, Y.; Sugano, T.
SO Journal of the Physics and Chemistry of Solids (Jan. 1995) vol.56, no.1, p.123-8. 17 refs.
Price: CCCC 0022-3697/95/$9.50+0.00
CODEN: JPCSAW ISSN: 0022-3697
DT Journal
TC Experimental
CY United Kingdom
LA English
DN A9511-7340N-003; B9506-2530D-033
AB The thermally activated conductivity behavior in microcrystalline composite Si-NiSi2 thin films depends significantly on their microstructure. Incorporated ***Ni*** atoms with concentrations from 0.2 to 1 at.% in as-deposited ***amorphous*** ***silicon*** thin films induce a ***crystallization*** process during thermal annealing. For concentrations below 0.5 at.% the ***Ni*** atoms precipitate in NiSi2 crystals which induce a needle-like growth of Si crystallites in the amorphous matrix. In the following process strain-induced effects lead to a transition from the amorphous to a microcrystalline matrix. For ***Ni*** concentrations of 0.5 at.% and above the ***crystallization*** leads to a homogeneous microcrystalline phase. In both cases the electric transport is found to be due to combined grain boundary states.

L12 ANSWER 5 OF 25 INSPEC

AN 94:4784129 INSPEC DN A9422-6822-005; B9411-0510D-051
TI Silicide precipitate formation and solid phase regrowth of ***Ni*** +-implanted ***amorphous*** ***silicon*** .
AU Kuznetsov, A.Yu.; Mordkovich, V.N.; Vyatkin, A.F.; Khodos, I.I. (Inst. of Microelectron. Technol., Acad. of Sci., Chernogolovka, Russia)
SO Microscopy of Semiconducting Materials 1993. Proceedings of the Royal Microscopical Society Conference
Editor(s): Cullis, A.G.; Staton-Bevan, A.E.; Hutchison, J.L.
Bristol, UK: IOP, 1993. p.191-4 of xviii+788 pp. 12 refs.
Conference: Oxford, UK, 5-8 April 1993
Sponsor(s): GEC Marconi Mater. Technol.; Office of US Naval Res.; Sharp Lab. Eur.; Royal Soc

ISBN: 0-7503-0290-9
DT Conference Article
TC Experimental
CY United Kingdom
LA English
DN A9422-6822-005; B9411-0510D-051
AB An enhanced rate of ***crystallization*** and ***nickel*** silicide precipitation are observed in silicon amorphized by ***Ni*** + implantation. The solid phase epitaxial regrowth at the silicide/silicon interface is assumed to be responsible for the enhanced rate of regrowth stimulated by point defect generation during silicide formation.

L12 ANSWER 6 OF 25 INSPEC
COPYRIGHT 1995 IEE
AN 94:4784124 INSPEC DN A9422-6470K-013
TI In situ TEM studies of the ***crystallization*** of ***amorphous*** ***silicon*** : the role of silicides.
AU Batstone, J.L. (IBM Thomas J. Watson Res. Center, Yorktown Heights, NY, USA); Hayzelden, C.
SO Microscopy of Semiconducting Materials 1993. Proceedings of the Royal Microscopical Society Conference
Editor(s): Cullis, A.G.; Staton-Bevan, A.E.; Hutchison, J.L.
Bristol, UK: IOP, 1993. p.165-72 of xviii+788 pp. 9 refs.
Conference: Oxford, UK, 5-8 April 1993
Sponsor(s): GEC Marconi Mater. Technol.; Office of US Naval Res.; Sharp Lab. Eur.; Royal Soc
ISBN: 0-7503-0290-9
DT Conference Article
TC Experimental
CY United Kingdom
LA English
DN A9422-6470K-013
AB In situ transmission electron microscopy is a powerful tool for the dynamic study of phase transformations. The amorphous to crystalline phase transformation has been studied for ***amorphous*** ***silicon*** and ***Ni*** -implanted ***amorphous*** ***silicon*** . The mechanisms of interfacial propagation are discussed.

L12 ANSWER 7 OF 25 INSPEC
COPYRIGHT 1995 IEE
AN 94:4580948 INSPEC DN A9405-6855-018
TI Precipitation, epitaxy and nucleation in ***nickel*** implanted a-Si.
AU Kuznetsov, A.Yu.; Khodos, I.I.; Mordkovich, V.N.; Vyatkin, A.F. (Inst. of Microelectronics Technol. & Superpure Mater., Acad. of Sci., Chernogolovka, Russia)
SO Applied Surface Science (Nov. 1993) vol.73, p.253-9. 10 refs.
Price: CCCC 0169-4332/93/$06.00
CODEN: ASUSEE ISSN: 0169-4332
Conference: RMS 1993. Fifth European Workshop on Refractory Metals and Silicides. Sint Michielsgestel, Netherlands, 29-31 March 1993
Sponsor(s): Minist. Econom. Affairs; Stichting Physica; Bandgap Technol.; Fisons Instrum.; Leybold
DT Conference Article; Journal
TC Experimental
CY Netherlands

LA English
DN A9405-6855-018
AB We report new evidence of ***nickel*** -silicide-mediated ***crystallization*** . ***Nickel*** -silicide precipitates were found to dissolve during ***crystallization*** ; the ***nickel*** atoms diffuse through ***crystallized*** silicon regions and form new inclusions in the amorphous phase. Randomization of the precipitates from the region of the initial maximum of ***nickel*** concentration depends on the amount of ***polycrystalline*** ***silicon*** ***crystallized*** . It is assumed that the low-temperature ***crystallization*** observed both at the initial amorphous/crystalline interface and at silicide facets can be caused by self-diffusivity enhancement due to the formation of point defects during silicidation.

L12 ANSWER 8 OF 25 INSPEC
COPYRIGHT 1995 IEE
AN 94:4578227 INSPEC DN A9404-6855-120
TI Metal induced ***crystallization*** of ***amorphous*** ***silicon*** thin films.
AU Hempel, T.; Schoenfeld, O.; Veit, P. (Tech. Univ. Magdeburg, Inst. fur Experimentelle Phys., Germany)
SO Beam Solid Interactions: Fundamentals and Applications Symposium Editor(s): Nastasi, M.; Harriott, L.R.; Herbots, N.; Averback, R.S. Pittsburgh, PA, USA: Mater. Res. Soc, 1993. p.267-72 of xvii+913 pp. 7 refs.
Conference: Boston, MA, USA, 30 Nov-4 Dec 1992
DT Conference Article
TC Experimental
CY United States
LA English
DN A9404-6855-120
AB The ***crystallization*** behaviour of ***Ni*** doped magnetron co-sputtered ***amorphous*** ***silicon*** thin films (MSP-a-Si(***Ni***)) has been investigated by means of near infrared-visible-ultraviolet (NIR-VIS-UV) transmission spectroscopy, transmission electron microscopy (TEM) and scanning transmission electron microscopy (STEM). Using the changes in optical transmission spectra of ***crystallized*** a-Si(***Ni***) thin films the ***crystallization*** kinetics is described. At the ***crystallization*** frontier a needle morphology of single crystals is observed with STEM, which is followed by solid state diffusion of ***nickel*** through the amorphous matrix. Using a long term thermal treatment the authors have studied the formation of expansive monocrystalline networks.

L12 ANSWER 9 OF 25 INSPEC
COPYRIGHT 1995 IEE
AN 93:4484487 INSPEC DN A9321-8115N-002; B9311-0510D-009
TI Enhanced solid phase epitaxial ***recrystallization*** of ***amorphous*** ***silicon*** due to ***nickel*** silicide precipitation resulting from ion implantation and annealing.
AU Kuznetsov, A.Yu.; Khodos, I.I.; Mordkovich, V.N.; Vyatkin, A.F. (Inst. of Microelectron. Technol. & Superpure Mater., Russian Acad. of Sci., Moscow, Russia); Chichenin, N.G.
SO Nuclear Instruments & Methods in Physics Research, Section B (Beam Interactions with Materials and Atoms) (June 1993) vol.B80-81, pt.2, p.990-3. 15 refs.

Price: CCCC 0168-583X/93/$06.00
CODEN: NIMBEU ISSN: 0168-583X
Conference: Eighth International Conference on Ion Beam Modification of Materials. Heidelberg, Germany, 7-11 Sept 1992
Sponsor(s): Anatech Ltd.; Bayer AG; Daimler-Benz AG; Danfysik A/S; et al
DT Conference Article; Journal
TC Experimental
CY Netherlands
LA English
DN A9321-8115N-002; B9311-0510D-009
AB The mutual influence of solid phase epitaxial regrowth (SPER) and the process of silicide precipitation in silicon is reported. A significant enhancement of SPER in the amorphous layer produced by ***Ni***+ ions compared to that produced by Ge+ ions with equal radiation damage is observed. Also ***Ni*** redistribution in the amorphous phase at temperatures as low as 450 degrees C is observed, as well as precipitate growth, not in the region initially corresponding to the peak of the metal concentration but in the vicinity of the a-c interface. The paper also reports a simple phenomenological model for SPER, which treats self-diffusion in the amorphous phases as a limiting factor of the process.

L12 ANSWER 10 OF 25 INSPEC

AN 93:4480427 INSPEC DN A9320-6630N-002; B9310-2550B-032
TI Silicide formation and silicide-mediated ***crystallization*** of ***nickel*** -implanted ***amorphous*** ***silicon*** thin films.
AU Hayzelden, C. (Div. of Appl. Sci., Harvard Univ., Cambridge, MA, USA); Batstone, J.L.
SO Journal of Applied Physics (15 June 1993) vol.73, no.12, p.8279-89. 35 refs.
Price: CCCC 0021-8979/93/128279-11$06.00
CODEN: JAPIAU ISSN: 0021-8979
DT Journal
TC Experimental
CY United States
LA English
DN A9320-6630N-002; B9310-2550B-032
AB The nucleation and growth of isolated ***nickel*** disilicide precipitates in ***Ni*** -implanted amorphous Si thin films and the subsequent low-temperature silicide-mediated ***crystallization*** of Si was studied using in situ transmission electron microscopy. Analysis of the spatial distribution of the NiSi2 precipitates strongly suggested the occurrence of site saturation during nucleation. NiSi2 precipitates were observed in situ to migrate through the amorphous Si thin films leaving a trail of crystalline Si at temperatures as low as approximately 484 degrees C. Initially, a thin region of epitaxial Si formed on (111) faces of the octahedral NiSi2 precipitates with a coherent interface which was shown by high-resolution electron microscopy to be Type A. Migration of the NiSi2 precipitates led to the growth of needles of Si which were parallel to (111) directions. The growth rate of the crystalline Si was limited by diffusion through the NiSi2 precipitates, and an effective diffusivity was determined at 507 and 660 degrees C. A mechanism for the enhanced growth rate of crystalline Si is proposed.

L12 ANSWER 11 OF 25 INSPEC
COPYRIGHT 1995 IEE
AN 93:4463717 INSPEC DN A9318-6822-027; B9309-2550F-070
TI Formation of ***nickel*** silicides on ion-amorphized silicon.
AU Mohadjeri, B. (R. Inst. of Technol., Kista-Stockholm, Sweden); Linnros, J.; Svensson, B.G.; Ostling, M.; Johansson, S.; d'Heurle, F.M.
SO Advanced Metallization and Processing for Semiconductor Devices and Circuits - II. Symposium
Editor(s): Katz, A.; Murarka, S.P.; Nissim, Y.I.; Harper, J.M.E.
Pittsburgh, PA, USA: Mater. Res. Soc, 1992. p.405-10 of xvii+965 pp. 9 refs.
Conference: San Francisco, CA, USA, 27 April-1 May 1992
Sponsor(s): AT&T Bell Lab.; A.G. Associates; Air Products & Chem.; et al
DT Conference Article
TC Experimental
CY United States
LA English
DN A9318-6822-027; B9309-2550F-070
AB The formation of NiSi and NiSi2 upon annealing of an ion-amorphized ***Ni*** /Si structure has been studied by various surface analytical techniques to characterize the morphology, stoichiometry and interface sharpness of the NiSi2 layer. In comparison with reactions of ***nickel*** on crystalline silicon (c-Si) sharpening of the NiSi2/c-Si interface is obtained for appropriate amorphization depths. Moreover, the surface roughness of the NiSi2 films is significantly reduced by implantation. The NiSi2 formation temperature is, however, not reduced as observed for structures with ***nickel*** deposited on ***amorphous*** ***silicon*** prepared by evaporation. This dissimilarity can be explained by an unexpected low ***crystallization*** temperature of the ion-amorphized structure, where ***Ni*** -enhanced solid phase epitaxy occurs at a temperature as low as 425 degrees C.

L12 ANSWER 12 OF 25 INSPEC
COPYRIGHT 1995 IEE
AN 93:4406931 INSPEC DN A9312-6855-037
TI Needle-like ***crystallization*** of ***Ni*** doped ***amorphous*** ***silicon*** thin films.
AU Hempel, T.; Schoenfeld, O. (Inst. fur Exp. Phys., Tech. Univ. Magdeburg, Germany); Syrowatka, F.
SO Solid State Communications (March 1993) vol.85, no.11, p.921-4. 6 refs.
Price: CCCC 0038-1098/93/$6.00+.00
CODEN: SSCOA4 ISSN: 0038-1098
DT Journal
TC Experimental
CY United States
LA English
DN A9312-6855-037
AB The ***crystallization*** behaviour of ***Ni*** doped co-sputtered ***amorphous*** ***silicon*** thin films (MSP a-Si(***Ni***)) is investigated by means of NIR-VIS-UV transmission spectroscopy and STEM. Using the change in optical transmission spectra of ***crystallized*** a-Si(***Ni***) thin films the ***crystallization*** kinetics is described.

During a thermal annealing process the crystalline phase forms at one edge of the sample and then extends across the whole thin film. At the ***crystallization*** frontier a needle morphology of single crystals is observed with STEM which may result from solid state diffusion of ***nickel*** through the amorphous matrix. Using a long term thermal treatment the authors achieve the formation of extensive monocrystalline networks.

L12 ANSWER 16 OF 25 INSPEC
COPYRIGHT 1995 IEE
AN 92:4063074 INSPEC DN B9202-2550-033
TI Uses of the plasma arc in microelectronics.
AU Gecim, H.S. (Dept. of Electr. & Electron. Eng., Hacettepe Univ., Ankara, Turkey); John, P.K.
SO International Journal of Electronics (Dec. 1991) vol.71, no.6, p.977-83. 17 refs.
Price: CCCC 0020-7217/91/$3.00
CODEN: IJELA2 ISSN: 0020-7217
DT Journal
TC Experimental
CY United Kingdom
LA English
DN B9202-2550-033
AB The ***crystallization*** of ***amorphous*** ***silicon*** (a:Si) thin films and metal-silicide compound formation using the plasma are discharge has been studied using Raman spectroscopy, Auger emission spectroscopy, Rutherford backscattering, photoconductivity measurements and surface morphology examination. Crystal sizes of the order of hundreds of microns were produced from 0.5 mu m thick a:Si film by using a single light pulse having 3-5 J cm-2 incident energy density. In the ***nickel*** -silicide formation study, a high degree of mixing of ***Ni*** and Si was found after exposure to an arc light pulse having 45 J cm-2 incident energy density. A 1000 AA thick film of ***Ni*** was deposited onto a (100) silicon wafer and covered with a 300 AA-thick anti-reflection a:Si coating.

L12 ANSWER 20 OF 25 INSPEC
COPYRIGHT 1995 IEE
AN 91:3793234 INSPEC DN A91017567
TI Silicide precipitation and silicon ***crystallization*** in ***nickel*** implanted ***amorphous*** ***silicon*** thin films.
AU Cammarata, R.C.; Thompson, C.V. (Dept. of Mater. Sci. & Technol, MIT, Cambridge, MA, USA); Hayzelden, C.; Tu, K.N.
SO Journal of Materials Research (Oct. 1990) vol.5, no.10, p.2133-8. 14 refs.
CODEN: JMREEE ISSN: 0884-2914
DT Journal
TC Experimental
CY United States
LA English
DN A91017567
AB The nucleation and growth kinetics of NiSi2 precipitation in ***amorphous*** ***silicon*** thin films ion implanted with ***nickel*** was investigated using scanning transmission electron microscopy. It was found that the nucleation rate could be approximately described by a delta function at time t=0 when the

films were annealed between 325 and 400 degrees C. The growth kinetics of the precipitates at these temperatures were described by r varies as tn, where r was the average radius and n was about 1/3. This behavior is consistent with models for growth of three-dimensional particles in a two-dimensional diffusion field. It was also found that the implanted amorphous films displayed an enhanced rate of single crystal silicon formation, apparently catalyzed by migrating silicide precipitates.

L12 ANSWER 21 OF 25 INSPEC

AN 90:3698330 INSPEC DN A90118177
TI Initial stage of the interfacial reaction between ***nickel*** and hydrogenated ***amorphous*** ***silicon*** .
AU Kawazu, Y.; Kudo, H.; Onari, S.; Arai, T. (Inst. of Appl. Phys., Tsukuba Univ., Ibaraki, Japan)
SO Japanese Journal of Applied Physics, Part 1 (Regular Papers & Short Notes) (April 1990) vol.29, no.4, p.729-38. 43 refs.
CODEN: JAPNDE ISSN: 0021-4922
DT Journal
TC Experimental
CY Japan
LA English
DN A90118177
AB The initial stage of the interfacial reaction between ***Ni*** and hydrogenated ***amorphous*** ***silicon*** has been studied mainly by in situ electrical resistance measurement. The change of the resistance in this system induced by the annealing at a constant heating rate shows a sudden drop, which corresponds to the amorphous-to-crystalline transformation of the ***Ni*** -Si intermixing layer. In situ resistance measurements for various intermixing layers in the initial stage demonstrate that the ***crystallization*** temperature becomes lower with the increase of the amount of ***Ni*** contained in the layer. The result means that the thermal stability of the intermixing layer decreases with its growth. It is suggested that the ***crystallization*** occurs when the amount of ***Ni*** contained in the intermixing layer reaches the critical thickness, which depends on the temperature.

L12 ANSWER 23 OF 25 INSPEC

AN 87:2958015 INSPEC DN A87111974
TI Transmission electron microscope study of the formation of Ni2Si and NiSi on ***amorphous*** ***silicon*** .
AU Aboelfotoh, M.O.; Tawancy, H.M.; d'Heurle, F.M. (IBM Thomas J. Watson Res. Center, Yorktown Heights, NY, USA)
SO Applied Physics Letters (18 May 1987) vol.50, no.20, p.1453-4. 16 refs.
Price: CCCC 0003-6951/87/201453-02$01.00
CODEN: APPLAB ISSN: 0003-6951
DT Journal
TC Experimental
CY United States
LA English
DN A87111974
AB The reaction of very thin (0.5-20 nm) layers of ***Ni*** with amorphous Si has been investigated by means of transmission electron

microscopy and diffraction. The experiment, which is directly parallel to a previous study of similar samples prepared with Pd and Pt, has led to different observations. With ***Ni*** it is found that an amorphous ***Ni*** -Si solution is formed first, and that silicide formation, at temperatures which decrease with the amount of deposited ***Ni*** , results from the ***crystallization*** of that amorphous phase. With Pt and Pd microcrystalline silicides had been observed immediately.

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     (FILE 'HOME' ENTERED AT 09:45:36 ON 28 SEP 95)

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L2         208 S KUDO, H/AU
L3          96 S ONARI, S/AU
L4         619 S ARAI, T/AU
L5         841 S L2 OR L3 OR L4
L6       34635 S CRYSTALLIZ? OR RECRYSTALLIZ?
L7           8 S L5 AND L6
L8       17119 S (POLYCRYSTALLINE OR AMORPHOUS) (W) SILICON OR POLYSILIC
L9        1108 S L6 AND L8
L10          0 S L9 AND CATALYST#
L11          1 S L9 AND CATALYTIC?
L12         25 S L9 AND (NI OR NICKEL )
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L7 ANSWER 2 OF 12 INSPEC
COPYRIGHT 1995 IEE
AN 93:4463717 INSPEC DN A9318-6822-027; B9309-2550F-070
TI Formation of nickel silicides on ion-amorphized silicon.
AU Mohadjeri, B. (R. Inst. of Technol., Kista-Stockholm, Sweden); Linnros, J.; Svensson, B.G.; Ostling, M.; Johansson, S.; ***d'Heurle, F.M.***
SO Advanced Metallization and Processing for Semiconductor Devices and Circuits - II. Symposium
Editor(s): Katz, A.; Murarka, S.P.; Nissim, Y.I.; Harper, J.M.E.
Pittsburgh, PA, USA: Mater. Res. Soc, 1992. p.405-10 of xvii+965 pp. 9 refs.
Conference: San Francisco, CA, USA, 27 April-1 May 1992
Sponsor(s): AT&T Bell Lab.; A.G. Associates; Air Products & Chem.; et al
DT Conference Article
TC Experimental
CY United States
LA English
DN A9318-6822-027; B9309-2550F-070
AB The formation of NiSi and NiSi2 upon annealing of an ion-amorphized Ni/Si structure has been studied by various surface analytical techniques to characterize the morphology, stoichiometry and interface sharpness of the NiSi2 layer. In comparison with reactions of nickel on crystalline silicon (c-Si) sharpening of the NiSi2/c-Si interface is obtained for appropriate amorphization depths. Moreover, the surface roughness of the NiSi2 films is significantly reduced by implantation. The NiSi2 formation temperature is, however, not reduced as observed for structures with nickel deposited on amorphous silicon prepared by evaporation. This dissimilarity can be explained by an unexpected low ***crystallization*** temperature of the ion-amorphized structure, where Ni-enhanced solid phase epitaxy occurs at a temperature as low as 425 degrees C.

L7 ANSWER 6 OF 12 INSPEC
COPYRIGHT 1995 IEE
AN 88:3133795 INSPEC DN A88068520
TI Nucleation of a new phase from the interaction of two adjacent phases: some silicides.
AU ***d'Heurle, F.M. (IBM Res. Center, Yorktown Heights, NY, USA)***
SO Journal of Materials Research (Jan.-Feb. 1988) vol.3, no.1, p.167-95. 133 refs.
Price: CCCC 0884-2914/88/010167-29$01.75
CODEN: JMREEE ISSN: 0884-2914
DT Journal
TC Bibliography; General Review
CY United States
LA English
DN A88068520
AB The reactions of metal layers with their silicon substrates resulting in the formation of various silicides are considered generally not only as phenomena common to all diffusion couples where new phases are formed, but also as typical of all transitions from two to three phases. The conditions under which such transitions will display the same characteristics as encountered in

the usual one-to-two phase transitions (condensation, ***crystallization*** , boiling) are analyzed by comparison to the classical theory of nucleation. Because of the lack of knowledge about the exact values of the relevant parameters, the discussion is carried out mostly in descriptive thermodynamic terms. Although nucleation effects are analyzed in general terms, the main focus of attention is a class of reactions where nucleation dominates the formation of a new phase; a salient feature of these reactions is the absence of any equilibrium temperature, although the nucleation temperatures are relatively well defined within narrow limits. Nucleation effects are correlated to such material characteristics as the stability of the nucleated phases, and to such kinetic characteristics as the sequence of phase formation. The modification of the energy levels of the different phases brought about by stress, ion bombardment, or the replacement of usual phases by metastable ones, are considered with respect to their effect on nucleation processes. The nearly total absence of literature references to nucleation in metal-metal diffusion couples is discussed with respect to some specific aspects of the metal-silicon reactions.

L7 ANSWER 8 OF 12 INSPEC

AN 87:2833239 INSPEC DN A87038267
TI Transmission electron microscope study of the initial stage of formation of Pd2Si and Pt2Si.
AU ***Aboelfotoh, M.O.*** ; Alessandrini, A.; ***d'Heurle, F.M. (IBM Thomas J. Watson Res. Center, Yorktown Heights, NY, USA)***
SO Applied Physics Letters (10 Nov. 1986) vol.49, no.19, p.1242-4. 19 refs.
Price: CCCC 0003-6951/86/451242-03$01.00
CODEN: APPLAB ISSN: 0003-6951
DT Journal
TC Experimental
CY United States
LA English
DN A87038267
AB Transmission electron microscopy of the compounds formed from the reaction between amorphous Si and thin (0.5-20 nm) layers of Pd and Pt reveals the early formation of crystalline silicides. The presence of phase in an amorphous state prior to ***crystallization*** is not observed. These results appear to be in agreement with earlier results of surface electron spectroscopy studies on these systems.

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FILE 'INSPEC' ENTERED AT 10:50:27 ON 28 SEP 95
E ABOELFOTOH/ AU
L1 86 S E8
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L2 37 S E4
E DHEURLE/AU
E D HEURLE/AU
L3 143 S E5

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L4          26 S E4
L5         285 S L1 OR L2 OR L3 OR L4
L6       34635 S CRYSTALLIZ? OR RECRYSTALLIZ?
L7          12 S L5 AND L6

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L1 ANSWER 5 OF 9 INSPEC
COPYRIGHT 1995 IEE
AN 92:4054996 INSPEC DN A9203-6822-010; B9202-2530D-022
TI Interfacial reaction between nickel and hydrogenated amorphous silicon.
AU ***Kawazu, Y.*** ; Kudo, H.; Onari, S.; Arai, T. (Inst. of Appl. Phys., Tsukuba Univ., Japan)
SO 20th International Conference on the Physics of Semiconductors
Editor(s): Anastassakis, E.M.; Joannopoulos, J.D.
Singapore: World Scientific, 1990. p.2047-50 vol.3 of 3 vol. (xxxvii+xxiv+xxiii+2676) pp. 4 refs.
Conference: Thessaloniki, Greece, 6-10 Aug 1990
Sponsor(s): Aristotle Univ.; Comm. Eur. Communities; et al
ISBN: 981-02-0539-2
DT Conference Article
TC Experimental
CY Singapore
LA English
DN A9203-6822-010; B9202-2530D-022
AB Interfacial reaction between nickel and a-Si:H was studied by the in situ measurement of sheet resistance of the sample under the annealing at a constant heating rate. The resistance curve at the rate of 2 K/min, has two features. One is a sudden drop at 260 degrees C, and the other is a gradual rise at 490 degrees C. These results are compared with the X-ray diffraction and Rutherford back scattering measurements.

L1 ANSWER 9 OF 9 INSPEC
COPYRIGHT 1995 IEE
AN 90:3698330 INSPEC DN A90118177
TI Initial stage of the interfacial reaction between nickel and hydrogenated amorphous silicon.
AU ***Kawazu, Y.*** ; Kudo, H.; Onari, S.; Arai, T. (Inst. of Appl. Phys., Tsukuba Univ., Ibaraki, Japan)
SO Japanese Journal of Applied Physics, Part 1 (Regular Papers & Short Notes) (April 1990) vol.29, no.4, p.729-38. 43 refs.
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AB The initial stage of the interfacial reaction between Ni and hydrogenated amorphous silicon has been studied mainly by in situ electrical resistance measurement. The change of the resistance in this system induced by the annealing at a constant heating rate shows a sudden drop, which corresponds to the amorphous-to-crystalline transformation of the Ni-Si intermixing layer. In situ resistance measurements for various intermixing layers in the initial stage demonstrate that the crystallization temperature becomes lower with the increase of the amount of Ni contained in the layer. The result means that the thermal stability of the intermixing layer decreases with its growth. It is suggested that the crystallization occurs when the amount of Ni contained in the intermixing layer reaches the critical thickness, which depends on the temperature.